



# AT/FP Considerations in Facility Construction

## *DOD Minimum AT/FP Construction Standards*

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## TOPICS

1. Background of DOD Standards
2. Where AT/FP applies
3. Categories of Facilities
4. Interim DOD AT/FP Construction Standards
5. Changes in Construction
6. Final Thought / Questions



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- CJCS directed J-34 to take lead in development and implementation of AT/FP construction standards
- Dec '98 Joint Service Security Engineering Working Group (SEWG) tasked to provide technical support and coordination
- DOD Directive 2000.12 requires that Military Departments establish military and minor construction programming policies to ensure that AT/FP features are included in the planning, design, and execution of construction projects.
- The Primary Purpose is to protect Personnel by reducing the risk of mass casualties.



## Security Engineering Working Group (SEWG) Participants

- Joint Staff J-34
- U.S. Army
  - USACE Protective Design Center
- U.S. Navy
  - NAVFAC Engineering Innovation and Criteria Office
  - Naval Facilities Engineering Service Center (NFESC)
  - NCIS
- Headquarters U.S. Marine Corps
- U.S. Air Force
  - Civil Engineer Support Agency



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1. Background of DOD Standards
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- **Interim Std.** Applies to FY02 MILCON and Beyond
  - New Construction
  - Major Renovation (Ren. Costs > 50% Repl. Cost)
- Applies only to Inhabited, Primary Gathering, and Troop Billeting Facilities
- CINC Standards may set more stringent AT/FP Construction Standards
  - ie. EUCOM, PACOM, CENTCOM
- There are no waivers from the minimum requirements



## *The Final Standard*

...The Standards and Where They Apply

## New “Final” Standard on The Way

### Interim Standard

- Only applies to MILCON projects
- Only applies to new construction and major renovations
- Includes only *requirements*

### “Final” Standard

- Applies to construction from all appropriations
- Applies to new and existing construction, expeditionary and temporary construction *plus leases (FY06/10)*
- Includes *requirements* and *recommendations*





# AT/FP Considerations in Facility Construction



## *Final Standards*

...The Standards and Where They Apply

- Standard 1: Minimum standoff distance
- Standard 2: Building separation
- Standard 3: Unobstructed space
- Standard 4: Drive-up / drop-off and access roads
- Standard 5: Parking beneath structures
- Standard 6: Progressive collapse avoidance
- Standard 7: Structural isolation
- Standard 8: Building overhangs
- Standard 9: Exterior masonry walls
- Standard 10: Glazing
- Standard 11: Building entrance layout
- Standard 12: Mailrooms
- Standard 13: Roof access
- Standard 14: Air intakes
- Standard 15: Overhead mounted Architectural features
- Standard 16 Air Intakes
- Standard 17: Emergency air distribution shutoff
- Standard 18: Utility distribution and installation
- Standard 19: Equipment bracing
- Standard 20: Under building access
- Standard 21: Mass notification



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## **There are Three Basic Categories of Facilities:**

- Inhabited Structures
- Primary Gathering Structures
- Troop Billeting Structures



## **Inhabited Structures:**

Structures intended to be occupied by DOD personnel with a personnel density greater than one person per 400 square feet (40 SM).

- Generally excludes industrial and storage facilities
- Does not include guard type facilities
- Does not currently include Family Housing Facilities with less than 13 units
- May include more densely populated portions of uninhabited structures (clarified definition)



## Primary Gathering Structures:

A subset of Inhabited Structures in which 50 or more DOD personnel routinely gather

- Indoor Recreation Facilities
- Medical Facilities
- Office Buildings
- Training Facilities





## Troop Billeting Structures:

A subset of Inhabited Structures where troops are billeted, not to include Military Family Housing



- Enlisted Barracks
- Trainee Barracks
- Transient Unaccompanied Personnel Housing
- Unaccompanied Enlisted/NCO/Officer Quarters



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# AT/FP Considerations in Facility Construction



...Interim DOD AT/FP Construction Standards

*In the Interim DOD AT/FP Construction Standards there are:*

## **Minimum Construction Standards:**

The Minimum Construction Standards apply regardless of the identified threat. They are to be incorporated into all new construction and major renovations for *inhabited* structures funded by MILCON from FY02 and beyond. **(Appendix 2 of the Interim DOD AT/FP Construction Standards.)**

## **Threat Specific Standards:**

The Threat Specific Construction Standards are applied in addition to the Minimum Standards to mitigate specific threats and for increased levels of protection. **(Appendix 1 & 3 of the Interim DOD AT/FP Construction Standards.)**





**If no Specific Threat is identified – the Minimum Construction Standards STILL APPLY (See Appendix 2 of the Interim DOD AT/FP Construction Standards)**

**The Standoff Distances are only one part of the minimum requirements. Even if the standoff distances are met, all of the other requirements of Appendix 2 MUST be met.**



- Standard 1 – SITEWORK
  - Facility Access
    - Minimize lines of approach perpendicular to structures
    - Minimize vehicle access points
    - Site facilities with large non-DOD visitor populations away from inhabited structures where possible
  - Facility Considerations
    - Maintain 30ft. Clear zone (6" package or object)
    - Minimize exposure to surveillance and observation of assets from uncontrolled natural or man-made vantage points.



- Standard 1 – SITEWORK continued
  - Facility Standoff/Separation
    - Minimum perimeter standoff
      - 150 ft. for Primary Gathering and Troop Billeting
      - 80 ft. for Inhabited Facilities
    - Trash container standoff
      - 80 ft. for Primary Gathering and Troop Billeting
      - 30 ft. for Inhabited Facilities
    - Building Separation
      - 30 ft. for Primary Gathering and Troop Billeting Facilities (modified after release)
      - Inhabited Structures not specifically addressed



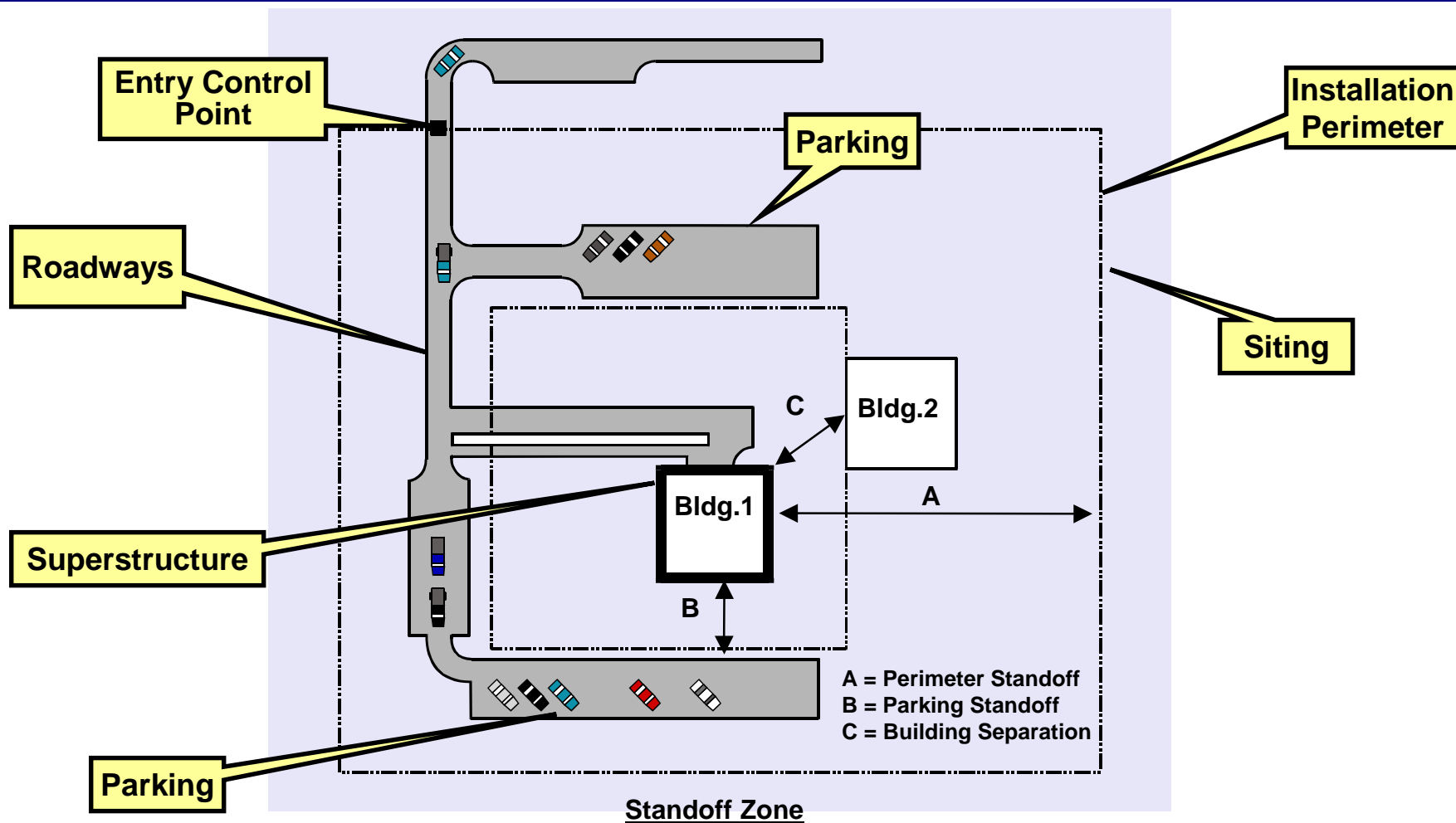
- **Standard 2 – PARKING AND ROADWAYS**
  - Parking Beneath Inhabited Structures strongly discouraged. Has to be mitigated if it occurs.
  - Parking and Roadway Standoff Distances
    - 80 ft. Primary Gathering and Troop Billeting Structures
    - 30 ft. Inhabited Structures



# AT/FP Considerations in Facility Construction



...Interim DOD AT/FP Construction Standards





What happens if the standoff distances are not met?

**The building must be hardened beyond the Minimum Construction Standards.**



- **Standard 3 – BUILDING LAYOUT**
  - Minimize or mitigate exposure of personnel to potential glass fragment hazards
  - Design circulation within facilities to provide detection of people approaching controlled areas or occupied spaces
  - When possible, position exterior doors on inhabited structures so they cannot be easily targeted from the installation perimeter or uncontrolled vantage point



- Standard 4 – SUPERSTRUCTURE
- Structural –
  - For structures three stories or more, design to prevent progressive collapse
  - Design all multi-story vertical load carrying elements assuming loss of lateral support at any one floor level
  - All exterior masonry walls will be reinforced
  - Run concrete floor slab reinf. cont. through both faces of the slab and into the beams and columns to improve ability to withstand load reversals.





- Standard 4 – SUPERSTRUCTURE
- Structural Cont'd
  - Exterior walls will span vertically to minimize blast loads on columns
  - Structurally separate portions of inhabited structures with lesser occupancies from the inhabited portions of the structure when portions with lesser occupancies are located within prescribed standoff distances
  - Where these requirements can not be met for major renovations, provide as much mitigation is practical



- Standard 4 – SUPERSTRUCTURE
- Non-Structural
  - Attach interior ceiling mounted fixtures to the supporting structural system (I.e. use seismic detailing) in inhabited structures.
  - This includes suspended ceilings, light fixtures, and mechanical and electrical ducting and pipes.



- Standard 4 – SUPERSTRUCTURE
- Exterior Windows



- For single glazed windows use a minimum of ¼" (6mm) annealed laminated glass.
  - For insulated glass units, the inner pane should be a minimum of ¼" (6mm) annealed laminated glass
- Exterior Doors
    - Use a minimum of ¼" (6mm) annealed laminated glass for exterior door glazing.



# AT/FP Considerations in Facility Construction



...Interim DOD AT/FP Construction Standards

Laminated Glazing is to prevent this...

Historically glass fragmentation has caused 85% of the injuries in blast events





- Standard 5 – MAILROOMS
  - Avoid routing key utilities (including communications, fire detection and alarm, water mains, etc) through or on common walls to mailrooms in inhabited facilities
  - Locate mailrooms on perimeters of inhabited structures



- Standard 6 – MECHANICAL AND UTILITY SYSTEMS
  - Locate air intakes above the first story ceiling (for two-story or higher) or on the roof of single-story inhabited structures, and restrict access to the intakes
  - Control access to roofs, avoid external ladders or secure them
  - Provide an emergency shutoff switch in the control system that shuts down the HVAC System



- Standard 6 – MECHANICAL AND UTILITY SYSTEMS, Continued
  - Ensure that redundant utilities do not run in the same locations or chases
  - Secure exterior access to power/heat plants, gas mains, water supplies, communications, electrical service, or other support facilities or infrastructure
  - Construct fire protection systems using seismic detailing



- Threat Specific Standards
  - Vehicle Bomb Tactics
  - Placed Bomb Tactics
  - Ballistic Tactics

If a Specific Threat is identified – the building must be hardened beyond the Minimum Construction Standards (See Appendix 1 and 3 of the Interim DOD AT/FP Construction Standards)



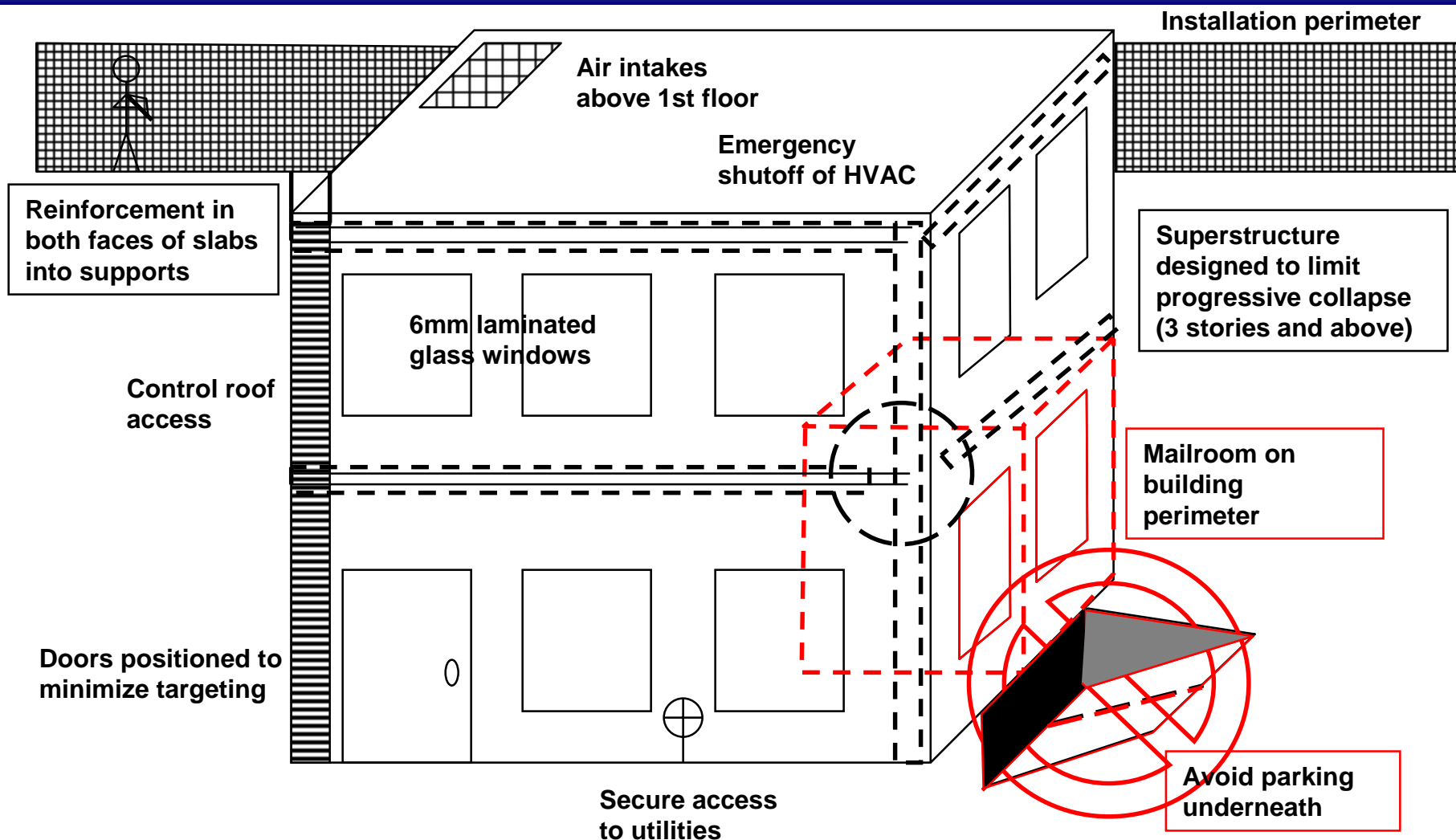


# AT/FP Considerations in Facility Construction



## Building Standards

...Interim DOD AT/FP Construction Standards





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- Civil
  - Renewed Emphasis on Standoff
  - Maintaining Clear Zone
  - Some Projects will Include
    - Active Vehicle Barriers
    - Passive Vehicle Barriers
    - Security Fencing
    - More Exterior IDS

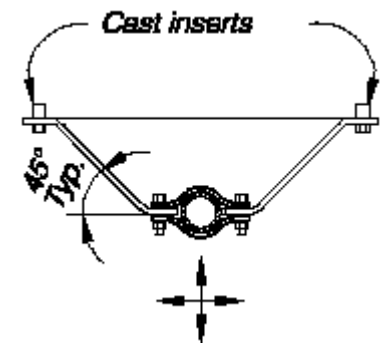
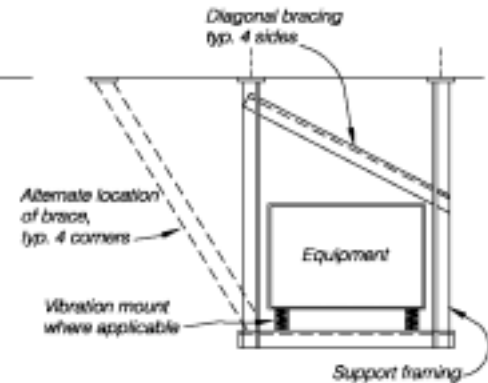








- Mechanical/Electrical
  - Use of “Seismic Detailing” more common
    - ACT / Lights
    - Mechanical Piping and Ductwork
    - Electrical Equipment
    - Fire Protection Piping and Equipment
  - Provision for HVAC Emergency Shutoff
  - Location of Air Intakes





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## *A Final Thought*

...Questions

***If we always do what we have always done,  
we will always get what what we  
have always gotten***

***-anonymous***



Exterior of US Embassy building in Dar es Salaam  
after bombing, 7 August.



(AP PHOTO)